

28771 S/057/61/031/010/004/015
B104/B125

10.2000

26.2311

AUTHOR: Sagdeyev, R. Z.

TITLE: Fine structure of the front of a shock wave propagating in rarefied plasma transverse to a magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 10, 1961, 1185 - 1191

TEXT: The author studied the structure of the front of a shock wave propagating transverse to a magnetic field in "cold" plasma. The mean free path is assumed to be large, and the Larmor radius within the front to be small, compared with the other characteristic dimensions. Since the Larmor radius is small, viscosity and heat conductivity are negligible if the irreversible dissipation is taken into account. The gyro relaxation damping is also low. The Joule heat is regarded as a friction of electrons on ions. A system of differential equations is given for quantities characterizing the plasma and the selfconsisting electromagnetic fields inside the shock wave. A coordinate system moving with the wave front was chosen. The zy-plane is the front plane, and the magnetic field is directed along the z-axis. The following quantities characterize plasma

Card 1/4

28771 S/057/61/031/010/004/015
B104/B125

Fine structure of the front...

and field: n (particle density), H , v (plasma velocity in the direction of wave propagation), v_y (electron velocity), and E_y . Six equations exist for these quantities: 1) equation of conservation for the particle flux; 2) equation of conservation for the momentum flux; 3) equation of conservation for the energy flux; 4) equation of electron motion in the direction of the electric current (along the y -axis); 5) and 6) Maxwell equations. As is shown, the equation of conservation for the energy flux may be left out in gas-dynamic approximation. The system

$$\frac{d}{dx}(nv) = 0, \quad (1)$$

$$\frac{d}{dx}\left(\frac{m_0 nv^2}{2} + \frac{H^2}{8\pi}\right) = 0, \quad (2)$$

$$m_0 nv \frac{dv_y}{dx} = -enE_y + \frac{e}{c} nvH - \gamma m_0 nv_y, \quad (3)$$

$$\frac{dE_y}{dx} = 0, \quad (4)$$

$$\frac{dH}{dx} = \frac{4\pi}{c} nev_y. \quad (5)$$

Card 2/4

28771

S/057/61/031/010/004/015
B104/B125

Fine structure of the front...

is obtained, from which
$$-a^2 \frac{d^2 H}{dx^2} = H_0 - H + H \frac{H^2 - H_0^2}{8\pi m_i n_0 u^2} + \frac{a^2}{u} \frac{dH}{dx} \quad (6)$$

is derived. H_0 denotes the magnetic field in the plasma before the arrival of the shock wave; n_0 is the undisturbed ion or electron particle density; u is the shock-wave velocity relative to the undisturbed plasma; $a^2 = m_e c^2 / 4\pi n_0 e^2$. Eq. (6) is similar to the equation of motion of an anharmonic oscillator if there is friction; H denotes a generalized coordinate, and x is the time coordinate. The equation for the potential well of this anharmonic oscillator is discussed. The profile of the variation of H within the front is studied. At large total particle energies, H performs a damped harmonic oscillation. The front width is considerably smaller than the mean free path. If the amplitude of the magnetic field within the wave approaches the triple value of the initial magnetic field strength, the oscillator structure will be disturbed. Then, the velocity profile $v = v(x)$ will be no unique function of x . Instabilities occur in the plasma if the Mach number, M , is greater than

Card 3/4

Fine structure of the front...

S/057/01/031/010/004/015
B104/B125

2. If $M = 2$, the width of the shock-wave front will be reduced considerably. M. A. Leontovich and V. D. Shafranov are thanked for discussions. There are 5 figures and 11 references: 2 Soviet and 9 non-Soviet. The three most important references to English-language publications read as follows: J. Adlam et al., Phil. Mag., 3, 448, 1958; S. M. Patrick, Phys. Fluids, 3, 321, 1960; G. Chew et al., Proc. Roy. Soc., A236, 112 - 118, 1957.

SUBMITTED: January 3, 1961

Card 4/4



24040

S/020/61/138/003/012/017
B104/B205

24.2120

AUTHORS: Rudakov, L. I. and Sagdeyev, R. Z.

TITLE: Instability of an inhomogeneous rarefied plasma in a strong magnetic field

PERIODICAL: Doklady Akademii nauk SSSR, v. 138, no. 3, 1961, 581 - 583

TEXT: The mechanism of plasmatic instabilities which are not due to fluctuations of temperature has been studied on the following assumptions;

1) The pressure of the plasma is low as compared to the magnetic pressure: $p \gg H^2/8\pi$ [Abstracter's note: Obviously a misprint]; 2) instabilities occur after a period of time that is smaller than the collision time;

3) the frequency of build-up oscillations is considerably lower than the ion cyclotron frequency: $\omega \ll eH/Mc$; the wavelength, λ , of perturbations is much larger than the Larmor radius of ions, $\lambda \gg r_H$; 4) $H^2/8\pi \ll nMc^2$. It

is further assumed that the magnetic field $\vec{H}$ is every where parallel to the z-axis, and that the quantity characterizing the steady state of the plasma varies in the direction of the x-axis. Slight perturbations of

Card 1/4

24040

S/020/61/138/003/012/017
B104/B205

Instability of an inhomogeneous...

the steady state, having the form $A(x) \exp i(k_z z + k_y y - \omega t)$, are described next. The correction for the distribution functions of electrons and ions, obtained from the solutions of the linearized equations of motion of electrons and ions, reads

$$f_a = -i \left(\frac{e_a}{m_a} E_x \frac{\partial f_{0a}}{\partial v_x} + c \frac{E_y}{H_0} \frac{\partial f_{0a}}{\partial x} \right) \frac{1}{\omega - k_z v_x}; \quad (1)$$

$\alpha = i, e$ (ions and electrons, respectively) holds for the subscript α ; f_0 is the unperturbed distribution function. The assumption made under 3) is used here. It is shown that, if only frequencies smaller than the Larmor frequency are considered, it follows that only those perturbations can be taken into account, which are propagated with phase velocities much lower than the Alfvén velocities. Based on these results, the perturbations of the scalar potential ϕ are given by

$$\frac{d^2 \phi}{dx^2} - F(\omega, k, x) \phi = 0, \quad (5)$$

where

$$F(\omega, k, x) = \frac{\omega_H^2}{\omega} k_z^2 \int \frac{v_x dv_x}{\omega - k_z v_x} \left\{ \left[\frac{M}{m} \frac{\partial f_{0e}}{\partial v_x} + \frac{\partial f_{0i}}{\partial v_x} \right] + \frac{k_y}{k_z} \frac{1}{\omega_H} \frac{\partial}{\partial x} (f_{0e} - f_{0i}) \right\}$$

$$\left(\omega_H = \frac{eH}{Mc} \right).$$

Card 2/4

24040

S/020/61/138/003/012/017

B104/B205

Instability of an inhomogeneous...

For a homogeneous plasma, Eq. (5) leads to the well-known dispersion relation of "ion sound" oscillations:

$$\int \frac{v_z dv_z}{\omega - k_z v_z} \left[\frac{M}{m} \frac{\partial f_{0e}}{\partial v_z} + \frac{\partial f_{0e}}{\partial v_z} \right] = 0. \quad (A)$$

In an inhomogeneous plasma, the solutions to Eq. (5) must be sought for a φ which decreases toward both sides ($x \rightarrow \pm \infty$). The eigenvalues ω are determined by Eq. (5) together with this requirement. Solutions of this type are local solutions near the point x , where $F(\omega, k, x) = 0$ (6). In the neighborhood of x , Eq. (5) has the form of an Ayri equation with a complex argument. The application of the results obtained above to a case where the particles have a Maxwellian velocity distribution leads to the following conclusions: If $n(x) = \text{const}$ and $T(x) \neq \text{const}$, the equation

$$\omega^3 + \frac{k_y}{k_z} \frac{d \ln T}{dx} k_z^2 \frac{2T^2}{M^2 \omega_H} = 0. \quad (7)$$

will exist for the interval $\sqrt{T/M} \ll \omega/k \ll T/m$, provided

$\frac{k_y^2}{k_z^2} \left(\frac{d \ln T}{dx} \right)^2 r_H^2 \gg 1$. There are always roots of this equation that yield

Card 3/4

24040

S/020/61/138/003/012/017

B104/B205

Instability of an inhomogeneous...

instabilities. The above-mentioned limitation for ω/k is equivalent to a hydrodynamic approximation, for which $\gamma = c_p/c_v \sim 1$ is assumed. Furthermore, Eq. (7) does not utilize all roots of the dispersion relation (6). If $T(x) = \text{const}$ and $n(x) \neq \text{const}$, (6) will have complex roots that correspond to an attenuation of oscillations (the plasma is stable). Academician M. A. Leontovich is thanked for valuable advice and comments. There are 5 references: 1 Soviet-bloc and 4 non-Soviet-bloc.

PRESENTED: January 28, 1961, by M. A. Leontovich, Academician

SUBMITTED: December 27, 1960

Card 4/4

22293

S/053/61/073/004/006/007
B125/B201

24.2120 also 3617, 3817

AUTHORS: Vedenov, A. A., Velikhov, Ye. P., Sagdeev, R. Z.

TITLE: The stability of plasma

PERIODICAL: Uspekhi fizicheskikh nauk, v. 73, no. 4, 1961, 701-766

TEXT: The authors of the present paper report on the basic physical results of the theory of stability, and illustrate the subject by physical considerations, without making an analysis of the mathematical means. The problem of the stability has been practically studied to some completeness only where small disturbances are concerned. The linear theory does not, in principle, distinguish between metastable and stable conditions, and is therefore unsuited in the case where a steady state is separated by a barrier from another one. This problem already leads to the nonlinear theory of stability. With the exception of some special cases, there is as yet no nonlinear theory of stability. The "supercritical" theory of stability, which has been successfully developed in the recent past, deals with the effect of perturbations on an average background, and the development of small perturbations on this background. This method

Card 1/7

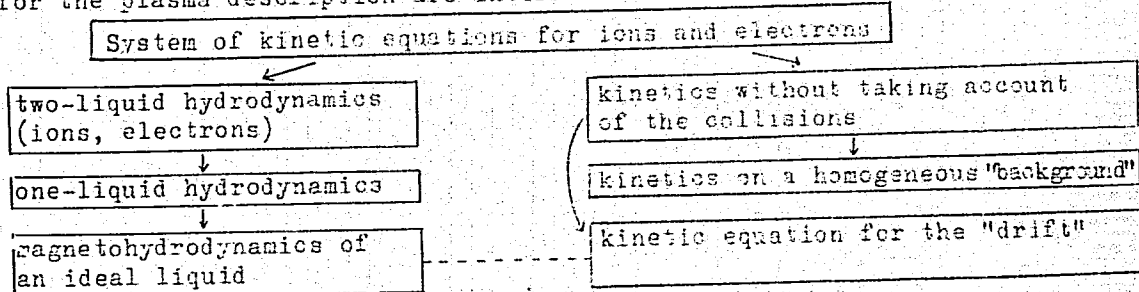
22293

S/053/61/073/004/006/007

B:25/B201

The stability of plasma

is suitable if the critical conditions of stability are exceeded to a slight extent. Of some significance in terms of physics are (1) the aperiodic instability, where the deviation from the position of equilibrium increases monotonically in the progress of time; (2) oscillations with growing amplitude. The mathematical conditions for the aperiodicity or for an oscillation instability read: $\text{Re } \omega = 0$ and $\text{Re } \omega \neq 0$, respectively. [Abstracter's note: because of the length of the paper, only its articulation and the principal equations can be given here.] The methods for the plasma description are interrelated as follows:



Card 2/7

22293

S/053/61/073/004/006/007
B125/B201

The stability of plasma

The system of equations of ideal magnetohydrodynamics for an ideal plasma (zero dissipation and vanishing dissipation) reads:

$$\frac{\partial \rho}{\partial t} + \text{div } \rho \mathbf{v} = 0. \quad (3.1)$$

$$\frac{\partial \mathbf{v}}{\partial t} + (\mathbf{v}, \nabla) \mathbf{v} = -\frac{1}{\rho} \nabla p + \frac{1}{4\pi \rho c} [\text{rot } \mathbf{H}, \mathbf{H}]. \quad (3.2)$$

$$\frac{\partial \mathbf{H}}{\partial t} = \text{rot} [\mathbf{v}, \mathbf{H}], \quad (3.3)$$

$$p = p(\rho). \quad (3.4)$$

When considering dissipative effects, the term $\eta \Delta \vec{v} + \left(\frac{\eta}{3} + \zeta\right) \text{grad div } \vec{v}$ appears additionally on the right-hand side of (3.2), where η and ζ denote the viscosity coefficients. In addition, $\frac{c^2}{4\pi\sigma} \Delta \vec{H}$ appears on the right-hand side of (3.3). The place of (3.4) is taken by the two equations $p = p(\rho, T)$ and

Card 3/7

22293

S/053/61/073/004/006/007
B125/B201

The stability of plasma.

$$\frac{\partial}{\partial t} \left\{ q \left(\frac{v^2}{2} + c_p T \right) + \frac{H^2}{8\pi} \right\} = -\operatorname{div} \left\{ q \mathbf{v} \left(\frac{v^2}{2} + c_p T \right) + \frac{c}{4\pi} [\mathbf{E}, \mathbf{H}] - (v \hat{\sigma}) - \kappa \nabla T \right\}. \quad 3.4a$$

где

$$\sigma_{ik} = \eta \left(\frac{\partial v_i}{\partial x_k} + \frac{\partial v_k}{\partial x_i} - \frac{2}{3} \delta_{ik} \frac{\partial v_l}{\partial x_l} \right) + \zeta \delta_{ik} \frac{\partial v_l}{\partial x_l}.$$

where κ denotes the heat conductivity. In the case of a homogeneous or almost homogeneous background one obtains:

$$\left. \begin{aligned} \frac{\partial f}{\partial t} + (\mathbf{v} \nabla) f + \left\{ \frac{e\mathbf{E}}{m} + \frac{e}{mc} [\mathbf{v}, \mathbf{H}] \right\} \frac{\partial f}{\partial \mathbf{v}} &= 0; \\ \operatorname{div} \mathbf{E} &= 4\pi e \left(\int f_i d\mathbf{v} - \int f_e d\mathbf{v} \right), \quad \operatorname{div} \mathbf{H} = 0, \\ \operatorname{rot} \mathbf{H} &= \frac{4\pi}{c} e \left(\int f_i \mathbf{v} d\mathbf{v} - \int f_e \mathbf{v} d\mathbf{v} \right) + \frac{1}{c} \frac{\partial \mathbf{E}}{\partial t}, \quad \operatorname{rot} \mathbf{E} = -\frac{1}{c} \frac{\partial \mathbf{H}}{\partial t}. \end{aligned} \right\} \quad (3.1);$$

this system is also based upon the kinetic equations without taking account of collisions. In the "drift" approximation, $f_{dr}(\mathbf{v}, \mathbf{r}, t)$ can be introduced instead of the distribution function $f(\vec{\mathbf{v}}, \vec{\mathbf{r}}, t)$. The corresponding Card 4/7

22293

S/053/61/073/004/006/007

B125/B201

The stability of plasma

kinetic equation has the form

$$\frac{\partial f_{\lambda p}}{\partial t} + \text{div}_r \left(\frac{dr}{dt} \cdot f_{\lambda p} \right) + \frac{\partial}{\partial v_{\lambda}} \frac{\partial v_{\lambda}}{\partial r} f_{\lambda p} = 0. \quad (3.11)$$

II. Aperiodic plasma instability: 4. Ideal plasma. 4a. Energy principle; a slight displacement of the plasma from the position of equilibrium satisfies the equation of motion (4a,1). Here, ξ denotes the displacement from position of equilibrium. 4b. Stability of the plasma boundary (reference is made to an instability indicated by L. A. Artsimovich), convective instability, stability of a cylindrical pinch, stability of a rotating inhomogeneous plasma in a magnetic field, aperiodic instability of a non-Maxwellian plasma, stability of a plasma kept back by the pressure of a high-frequency electromagnetic field, aperiodic instability of a plasma taking dissipative processes into account, stability of the rotation of a plasma, stability of a pinch. III. Oscillation instability of a plasma. Instability of beams in the plasma, instability of two beams, absolute and "drift instability" of beams, stability of ion beams in a plasma, effect of a magnetic field upon the instability of beams, macroscopic instability of a "non-Maxwellian" plasma, cyclotron resonance,

Card 5/7

22293

S/053/61/073/004/006/007
B125/B201

The stability of plasma

mistuning (raskachka) of oscillations in a plasma in the presence of a relative motion of ions and electrons, microscopic instabilities of an inhomogeneous plasma, stability of plasma flows in a magnetic field, stability of plane flows, stability of flows in perpendicular to the field, stability of a rotating plasma, "oscillation convection" in a plasma, instability of the positive column of a gas discharge in a magnetic field. IV. Problems of the nonlinear theory of instability. This chapter deals with the quasilinear treatment of the "supercritical" state of the plasma, which is then used to study the behavior of the plasma near the limit of stability, the steady convection in a plasma and the "anomalous diffusion", the quasilinear approximation in the study of oscillation instabilities in a diluted plasma, the developed instability. Appendix I deals with the stability of the beams in a plasma, appendix II with the stability of a rotating plasma, namely, the homogeneous rotation of a plasma and the rotation of a plasma under the action of an electric field in a cylindrical condenser, appendix III with the stability of the positive column, and appendix IV with the ionic sound in an inhomogeneous plasma. There are 32 figures, 1 table, and 50 references: 30 Soviet-bloc. The two references to English-language publications read as follows:

Card 6/7

22293

The stability of plasma

S/053/61/073/004/006/007
B125/B201

B. B. Kadomtsev, A. Nedospasov, J. Plasma Phys. (1961) (being printed);
Y. Nakagawa, Phys. Fluids, 3, 82, 87 (1960).

X

Card: 7/7

SAGDEYEV, R. Z.

Universal Instability of a Magnetically Confined Plasma

A. A. Galeev, V. N. Orlovskii, and R. Z. Sagdeev
Institute of Nuclear Physics, 1962

Abstract

It is shown that a low pressure plasma ($\beta \ll H^2/8\pi$), confined by a magnetic field, is "universally" unstable with respect to local short-wave perturbations which do not distort the magnetic field, for any ratio between the spatial temperature and density gradients $d \ln T / d \ln n$. An analog of a similar "universal" instability in the hydrodynamic approximation is the instability related to finite thermal conductivity along the magnetic field.

Report presented at the Conference on Plasma Stability, Culham, UK, 17-22 Sep 62.

12210

S/057/62/032/011/002/014

B104/B102

AUTHORS: Orayevskiy, V. N., and Sagdeyev, R. Z.

TITLE: The stability of steady-state plasma oscillations

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 11, 1962, 1291-1296

TEXT: An investigation is made of the stability of nonlinear waves, called "background", in a plasma. A coordinate system moving with the waves is used, whereby the coefficients describing the small deviations from the background are independent of time the time dependence of the solution can be represented in the form $\exp(i\omega t)$. The problem then is to solve the system of equations $L_0 \psi = 0$, where $\hat{L}$ is a differential operator expressible in the form $\hat{L} = \hat{L}_0 + \hat{L}_1$. $\hat{L}_0$ is a differential operator with constant coefficients and $\hat{L}_1$ is a differential operator which tends to zero as the amplitude of the stationary waves vanishes. For waves of small amplitude $\hat{L}_1$ is small and perturbation theory can be applied. A discussion of the zeroth and the first approximation shows that in the case of degenerate states two different wave vectors $\vec{k}_1$ and $\vec{k}_2$ correspond

Card 1/3

MOISEYEV, S.S.; SAGDEYEV, R.Z.

Shock waves in a rarefied plasma placed in a weak magnetic field.
Dokl. AN SSSR 146 no.2:329-332 S '62. (MIRA 15:9)

1. Predstavleno akademikom A.A. Artsimovichem.
(Plasma (Ionized gases)) (Magnetic fields)

SAGDEYEV, R. Z.

Dissertation defended for the degree of Doctor of Physicomathematical Sciences
at the Joint Scientific Council on Physicomathematical and Technical Sciences;
Siberian Branch

"Collective Processes and Shockwaves in Plasma."

Vestnik Akad. Nauk, No. 4, 1963, pp 119-145

GALEYEV, A.A.; MOISEYEV, S.S.; SAGDEYEV, R.Z.

Theory of the stability of an inhomogeneous plasma and anomalous
diffusion. Atom. energ. 15 no.6:451-467 D '63. (MIRA 17:1)

S/056/63/044/002/058/065
B163/B186

AUTHORS: Moiseyev, S. S., Sagdeyev, R. Z.

TITLE: Bohm's diffusion coefficient

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44,
no. 2, 1963, 763-765

TEXT: In a fully ionized plasma in which the pressure is small as compared with the energy density of the magnetic field, instabilities may arise owing to a density gradient perpendicular to the magnetic field. The turbulence resulting from such instabilities gives rise to an anomalous transverse diffusion coefficient which is proportional to the plasma temperature and inversely proportional to the magnetic-field strength, i.e. of the type experimentally found by Bohm in 1949. A linear theory of the drift waves, in which the friction between the electron and ion gas is taken into account, yields an ordinary second-order differential equation for the perturbation of the electric potential which is solved in WKB approximation. From this a diffusion coefficient of Bohm's type results. This type of diffusion occurs only if the magnetic

Card 1/2

S/056/63/044/002/058/065
B163/B186

Bohm's diffusion coefficient

field strength is smaller than $L^{2/3} \parallel c(m_i m_e \nu T)^{1/3} / r^{4/3} e$, where L is the tube length in the direction of the magnetic field, c the velocity of light, m_i and m_e the ion and electron masses, respectively, ν the electron-ion collision frequency, r the tube radius and e the electron charge.

ASSOCIATION: Novosibirskiy gosudarstvennyy universitet (Novosibirsk State University)

SUBMITTED: November 21, 1962 (initially)
December 20, 1962 (after revision)

Card 2/2

SDEYEV, R. Z.
AID Nr. 1980-8 31 May

UNIVERSAL INSTABILITY OF INHOMOGENEOUS PLASMA (USSR)

Galeyev, A. A., V. N. Orayevskiy, and R. Z. Sagdeyev. Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 3, Mar 1963, 903-911.

S/056/63/044/003/022/053

It is proved analytically that short-wave perturbations in a low-pressure, low-density plasma contained in a magnetic field can cause a local instability which is independent of the configuration of the containing field and is, therefore, called a universal instability. Plasma in such a state of rarefaction cannot be examined by means of the magnetohydrodynamic model; instead, it must be considered within the framework of the kinetic theory based on the Boltzmann equation. However, since the kinetic theory is difficult to use in an instability analysis, two limiting cases are considered: a) the plasma is rarefied enough for the magnetohydrodynamic treatment to be invalid, and yet the mean free path is short enough for the plasma to be regarded as two interpenetrating fluids; and b) plasma density is low enough to permit the neglect of collision effects and the use of kinetic equations without the collision integral. Since the universal instability of rarefied plasma is based on short-wave perturbations, it is expected to lead to a slow turbulent diffusion rather than to the rapid escape of macroscopic plasma bunches from magnetic confinement. [VG]

Card 1/1

L 12409-63 EWT(1)/EWG(k)/ERO(b)-2/ES(w)-2/BDS AFFTC/ASD/ESD-3/SSD
Pz-4/Pab-4/Pi-4/Po-4 AT/IJP(C)

ACCESSION NR: AP3001397

S/0020/63/150/004/0775/0778

AUTHOR: Orayevskiy, V. N.; Sagdeyev, R. Z.

TITLE: Effect of "drifting" waves on the diffusion of plasma in a magnetic field.

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 1963, 775-778

TOPIC TAGS: plasma in magnetic field, diffusion of plasma, plasma instability

ABSTRACT: Theoretical investigations by B. B. Kadomtsev and A. V. Timofeyev (Doklady AN, vol. 146, 1962, page 581), by A. A. Galeev, V. N. Orayevskiy and Sagdeyev, R. Z. (Preprint, Inst. nuclear phys. Siberian section AN SSSR, 1962), and by L. I. Rudakov and A. Mikhailovskiy (Preprint, Inst. atomic energy, 1962) of the stability of nonuniform plasma in a strong magnetic field have shown that there are instabilities with wavelengths of the order of, or smaller than, the ionic Larmor radius in magnetic traps with a large Larmor radius. Authors investigated to what extent the oscillations due to this instability affect the magnetic retention of the plasma. Diffusion coefficients are evaluated for different conditions. Orig. art. has: 16 formulas, 2 figures.

Card 1/21

ZAGLAVOKY, G.M.; MOISEYEV, S.S.; SAGDEYEV, R.Z. (Novosibirsk)

"On the vanishing dissipation paradox in the magnetohydrodynamic stability theory".

report presented at the 2nd All Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

L 2347-66 EWT(1)/EWP(m)/ETC/EPF(n)-2/EWG(m)/EWA(d)/EPA(w)-2/FCS(k)/EWA(h)/EWA(c)
IJP(c) WW/AT

ACCESSION NR: AT5021030

UR/3041/64/000/004/0020/0080

AUTHOR: Sagdeyev, R. Z. 4/1. 65

TITLE: Collective processes and shock waves in a rarefied plasma 1, 44, 55 60 B+1

SOURCE: Voprosy teorii plazmy, no. 4, 1964, 20-80

TOPIC TAGS: rarefied plasma, plasma shock wave, mathematic physics, plasma instability, plasma oscillation, magnetic storm

ABSTRACT: This survey article is devoted to the application of the theory of collective processes to the calculation of the thickness of a shock front in a rarefied plasma. The essential problem is to account for the existence of shock fronts that are thin compared with the length of a mean free path of a plasma particle. In the first section the concept of collective process is introduced and it is shown how Boltzmann's equation with self-consistent field but no collision term can describe dissipative processes in which entropy increases. Instabilities arising from collective processes are discussed and are illustrated by those due to curvature of magnetic lines of force and to a highly anisotropic velocity distribution. It is shown that an unstable plasma tends toward a final state in which it can be described as an ensemble of interacting particles and waves. The wave-wave

Card 1/5

L 2347-66

ACCESSION NR: AT5021030

interactions are due to nonlinearities and are treated by separating the distribution function into slowly varying and rapidly varying parts. There follows a long section on nonlinear plasma oscillations. In a plasma the steepness of a wave front is limited by dispersion effects. The interesting case for shock waves is when the dispersion equation is linear at long wavelengths and dispersion effects appear at short wavelengths. This dispersion effect is discussed in detail for a solitary magnetic sound wave, and for a solitary ionic sound wave in a plasma in which the electron temperature greatly exceeds the ion temperature. There is a maximum amplitude above which the wave breaks up into turbulent motion. A very important damping mechanism is provided by the interaction of the wave with plasma particles whose velocities are close to the phase velocity of the wave. This process is discussed in detail for electron Langmuir waves, and it is shown that the decrement decreases with increasing wave amplitude. Nonlinear waves can be unstable with respect to different perturbations. Beam instability causes a solitary wave propagating transversely to a magnetic field in a cold plasma to break up into disordered Langmuir waves. Waves can also decay into two or several waves of different types; this process is exemplified by the decay of Alfvén waves into magnetic sound. Shock waves themselves are discussed in the third and final section of the paper. Concerning the propagation in rarefied plasmas of shock fronts that are thin compared with the mean free path, there are currently three different

Card 2/5

L 2347-66

ACCESSION NR: AT5021030

points of view; 1) the behavior of the shock front can be explained in terms of ordered nonlinear oscillations within the framework of the laminar theory; 2) there is anomalous dissipation in the shock front owing to turbulence; and 3) such shock fronts do not exist. The author's program is first to develop the laminar theory and test the stability of the solution it provides, and subsequently to construct a turbulence theory for the unstable situations and for those cases where no laminar solution exists. The laminar theory is developed for a low amplitude solitary wave propagating transversely to a strong magnetic field. In case the phase velocity increases with increasing frequency there is no laminar solution and anomalous damping is required. When the phase velocity decreases with increasing frequency, however, the wave front is sharp and a laminar theory is possible. This is the case for ionic sound when the electron temperature greatly exceeds the ion temperature. The theory for this case is worked out in detail, and it is shown that when the wave amplitude exceeds a certain critical value (which is proportional to the strength of the external magnetic field) there is no longer a single-valued ion velocity and the laminar theory breaks down. Phenomena occur which are analogous to the breaking of surface waves in a shallow channel, the magnetic field playing here a role similar to that of gravity in the case of surface breakers. In this case hot ions from behind the shock front penetrate into the cool plasma ahead of it, and the resulting anisotropic ion velocity distribu-

Card 3/5

L-2347-66

ACCESSION NR: AT5021030

tion leads to instability and the excitation of waves. Under these conditions the mean free path determining the thickness of the shock front is that of an ion between collisions with the waves. The thickness of the shock front under these circumstances has been calculated elsewhere (S.S. Moiseev and R.Z. Sagdeev, J. Nucl. Energy, Part C 5, 43, 1963). Here this calculation is described and it is made plausible that the thickness of the shock front is approximately cM/mL_1 , where M and m are the ion and electron masses, L_1 is the ion Langmuir frequency, and c is the velocity of light. There are still almost no experimental data on shock waves in rarefied plasmas. It has been suggested, however, that the sudden onset of magnetic storms may be due to passage of a shock front propagating in the interplanetary plasma. The above formula gives a thickness of some 10^9 or 10^{10} cm for a shock front in a plasma with a density of 10^2 cm $^{-3}$; if the propagation velocity is 10^8 cm/sec, the time of passage of the shock front would be approximately one minute. The approximate agreement of this time with the commencement times of magnetic storms is regarded as indirect confirmation of the theory. Orig. art. has: 148 formulas and 26 figures.

Card 4/5

L 2347-66

ACCESSION NR: AT5021030

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 019

ENCL: 00

SUB CODE: ME

OTHER: 013

PC
Card 5/5

L 27205-65 FS(m)/EW(1)/EWP(m)/EWG(v)/T-2/FCS(k)/EWA(1) Pd-1/Pe-5/Pq-4

9/0207/64/000/005/0044/0055

ACCESSION NR: AP5002863

AUTHORS: Zaslavskiy, G. M. (Novosibirsk); Moiseyev, S. S. (Novosibirsk); Sagdeyev, R. Z. (Novosibirsk)

TITLE: Asymptotic methods of the hydrodynamic theory of stability

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1964, 44-55

TOPIC TAGS: asymptotic property, stability condition, hydrodynamic theory, differential equation

ABSTRACT: The authors present an asymptotic method for solving a differential equation of the fourth order. Several problems in the hydrodynamic theory of stability and problems of frequency transformation in magnetic hydrodynamics and plasma physics can be described by the fourth order equation of this type. The differential equation is given as $\alpha \frac{d^4 \varphi}{d\xi^4} - U_2(\xi, k, \omega) \frac{d^2 \varphi}{d\xi^2} + U_1(\xi, k, \omega) \varphi = 0$, where α is a minor parameter, ξ - a coordinate variable, and ω is a frequency variable. Expressed in terms of an additional minor parameter, the problem becomes one of solving the equation $\alpha \beta^2 \frac{d^4 \varphi}{dx^4} - \beta U_2(x, k, \omega) \frac{d^2 \varphi}{dx^2} + U_1(x, k, \omega) \varphi = 0$, ($\alpha, \beta \ll 1$), in which

Cord 1/3

L 27205-65

3

ACCESSION NR: AP5002863

x is a dimensionless coordinate, k, ω - are problem parameters, α and β are minor parameters, and U_1 and U_2 are dimensionless functions. The general solution of this equation is given as $\varphi(x) = C \exp \left\{ \frac{1}{\sqrt{\beta}} \int q(x) dx \right\}$, $q(x) = q^{(0)}(x) + \sqrt{\beta} q^{(1)}(x) + \dots$, and it is shown that the solution can also be written

$$\varphi_l = \frac{C}{\sqrt{p_l}} \exp \int p_l dx \quad (l=1, 2)$$

$$\varphi_l = \frac{C}{\sqrt{p_l}} \exp \int p_l dx \quad (l=3, 4) .$$

The solution by asymptotic method is demonstrated for the weak case where $U_2 = Ux$, $x < 1$, $U \sim 1$, and for the strong case wherein complex variables are introduced. The author demonstrated that the classification of solution cases can be related to certain inequality relationships between α and β . A discussion is given concerning plasma instability in a gravitational field. The author thanks I. B. Khriplovich, A. A. Galeev, V. N. Oravevskiy for their valued discussions. Orig. art. has: 61 equations and 4 figures.

ASSOCIATION: none

Card 2/3

L 27205-65

ACCESSION NR: AP5002863

SUB CODE: ME, MA

SUBMITTED: 27May64

ENCL: 00

NO REF SOV: 007

OTHER: 006

Card 3/3

ACCESSION NR: AP4013408

8/0057/64/034/002/0248/0253

AUTHOR: Moiseyev, S.S.; Sagdeyev, R.Z.

TITLE: Effect of finite conductivity on the stability of plasma in a magnetic field

SOURCE: Zhurnal tekhn.fiz., v.34, no.2, 1964, 248-253

TOPIC TAGS: plasma, plasma stability, plasma conductivity, turbulent diffusion

ABSTRACT: It is shown that the finite conductivity of a plasma in a strong magnetic field can give rise to instability even in the absence of a longitudinal current. The calculations are based on the two fluid hydrodynamic model with quasi-neutrality assumed. The applied magnetic field is assumed to be uniform, although the plasma is not. The finite conductivity is introduced by an assumed constant collision rate of electrons with ions. The inertia of the electrons and the longitudinal motion of the ions are neglected. Heat transport by the electrons is taken into account. The linearized perturbation equations are written for a long wavelength disturbance with propagation velocity small compared with the Alven velocity, and the corresponding dispersion equation is derived. For infinite conductivity

Card 1/3

ACCESSION NR: AP4013408

the dispersion equation reduces to that obtained by A.A.Galeev, V.N.Orayevskiy and R.Z.Sagdeyev (Preprint, Novosibirsk,1962). The solution of the disperison equation is written for the case of constant temperature; it indicates instability for finite conductivity. When the electron temperature greatly exceeds the ion temperature and the conductivity is large, the instability is socillatory. For sufficiently low conductivity the instability is aperiodic. In order to determine whether localized disturbances can exist, a perturbation with a variable amplitude is introduced and the differential equation for the amplitude is derived. This equation is of the form of Schrödinger's equation with a complex potential. The equation is shown to admit localized solutions provided the conductivity is not too great. The coefficient of turbulent diffusion arising from the present instability is estimated. The diffusion coefficient is of the order of the turbulent velocity divided by the collision frequency. The turbulent velocity is obtained by equating the rate of velocity increase due to the instability, obtained from the solution of the dispersion equation, to the rate of dissipation into high frequency modes by the nonlinear hydrodynamic terms. The diffusion coefficient thus obtained is $cT/2\pi eH$. It is shown that this is of the same order as the diffusion coefficient assumed in Bohm's hypothesis (A.Cuthrie, P.K.Wakerling, The Characteristics of Electrical Discharges in

Card 2/3

ACCESSION NR: AP4013408

Magnetic Fields, No.4,1948), and that the turbulent diffusion decreases with increasing conductivity. Orig.art.has: 42 formulas and 1 figure.

ASSOCIATION: none

SUBMITTED: 18Jan63

DATE ACQ: 28Feb64

ENCL: 00

SUB CODE: PH

NR REF SOV: 003

OTHER: 002

Card 3/3

ACCESSION NR: AP4043833

S/0020/64/157/005/1088/1091

AUTHORS: Galejev, A. A.; Karpman, V. I.; Sagdeyev, R. Z.

TITLE: Concerning one solvable problem in the theory of plasma turbulence

SOURCE: AN SSSR. Doklady*, v. 157, no. 5, 1964, 1088-1091

TOPIC TAGS: turbulent plasma, kinetic equation, spectral energy distribution, electron ion plasma, plasma oscillation, electron oscillation, ion oscillation

ABSTRACT: The authors investigate several particular classes of problems involving the spectrum of the turbulent pulsations in a plasma. In view of the nonlinearity of the integral kinetic equation for the wave spectral energy density, all the attempts made heretofore consisted only of crude estimates. It is shown that the problem of nonlinear time evolution of a spectrum of Langmuir electron oscillations

Card 1/2

ACCESSION NR: AP4043833

tions in a homogeneous plasma without a magnetic field can be solved analytically. The initial integral equations are derived by a perturbation-theory method described by A. A. Vedenov et al. (Yaderny*y sintez, v. 1, 82, 1961) and by W. Drummond and D. Pines (paper no. 134, Salzburg Conference, September 1961). The result is a complete system of equations describing the turbulent kinetics of a rarefied plasma without a magnetic field, accurate to terms quadratic in the energy. The nonlinear relaxation of the electron plasma oscillations is then described, and it is shown that the principal role in the nonlinear relaxation of the electronic oscillations is played by the ions. Orig. art. has: 13 formulas. This report presented by M. A. Leontovich.

ASSOCIATION: Novosibirskiy gosudarstvenny*y universitet (Novosibirsk State University)

SUBMITTED: 20Feb64

ENCL: 00

SUB CODE: ME

NR REF SOV: 010

OTHER: 001

Card 2/2

L 16078-65 EWT(d) Pg-4 IJP(c)/ESD(dp)/AEDC(a)/AFWL/ASD(a)-5/AFETR
 ACCESSION NR: AP4048032 S/0020/64/158/006/1295/1298

AUTHORS: Zaslavskiy, G. M.; Moiseyev, S. S.; Sagdeyev, R. Z.

TITLE: Asymptotic method of solving the fourth order differential equation with two lesser parameters in hydrodynamic stability theory

SOURCE: AN SSSR. Doklady*, v. 158, no. 6, 1964, 1295-1298

TOPIC TAGS: Laplace transformation, differential equation, complex number, wave displacement, parametric equation

ABSTRACT: The authors solved the fourth-order differential equation occurring in the theory of hydrodynamic stability. The equation is of the Orr-Summerfield type for the case of a slightly nonhomogeneous substance

$$\alpha \beta^2 \phi^{IV} - \beta U_2(x, k, \omega) \phi'' + U_1(x, k, \omega) \phi = 0,$$

where k, ω - wave vector and wave frequency respectively, β - minor "quasiclassical" parameter which takes into account the weak nonhomogeneity along x , α - minor parameter linked with the problem statement (proportional to the viscosity in the Orr-Summerfield case), and $U_1, U_2 \sim 1$, exclusive of the small regions where U_1 and

Card 1/2

L 16078-65

ACCESSION NR: AP4048032

U₂ go to zero. Wave trace solution is accomplished by asymptotic methods with separate algorithms dealing with points of "intersection" where U₁ and U₂ revert to zero. Complex coordinates are used to describe a system of equations which lend themselves to certain "quantization" rules to yield a means of wave tracing referenced to real axes. The authors express gratitude to A. A. Galeev, I. B. Khrilovich, and V. N. Oranevskiy for their valued discussions. Orig. art. has: 2 figures and 16 equations.

ASSOCIATION: Novosibirskiy gosudarstvennyy universitet (Novosibirsk State University)

SUBMITTED: 23Apr64

ENCL: 00

SUB CODE: MA, ME

NO REF SOV: 003

OTHER: 002

Card 2/2

L 26762-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) AT

ACC NR: AP6013915

SOURCE CODE: UR/0207/66/000/002/0003/0006

AUTHOR: Berezin, Yu. A. (Novosibirsk); Sagdeyev, R. Z. (Novosibirsk)

ORG: none

TITLE: Theory of nonlinear waves in a plasma

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1966, 3-6

TOPIC TAGS: plasma physics, plasma magnetic fluid, ion, shock wave, electron, plasma wave

ABSTRACT: The authors study nonlinear waves propagating across a magnetic field in a cold rarefield quasineutral plasma consisting of electrons and two types of ions. Dispersion curves are given for low amplitude waves in a three-component plasma (see figure 1). The lower branch of the dispersion curve describes nonlinear waves at relatively low velocities. As velocity increases, the upper branch of the curve describes nonlinear wave profiles. Electron velocity is determined by drift approximation. An expression is given for the velocity of an isolated wave in terms of the maximum magnetic field in the wave. A figure is given showing this relationship for various relative ion concentrations (see figure 2). The lower the concentration of light component in the plasma the greater is the deviation from linearity. The lower velocity limit of the wave is equal to the speed of sound and the upper limit is equal

Card 1/3

L 26762-66

ACC NR: AP6013915

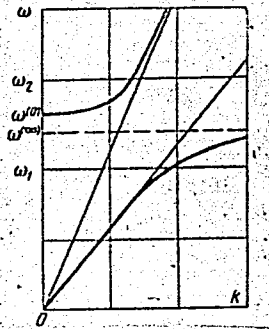


Fig. 1.

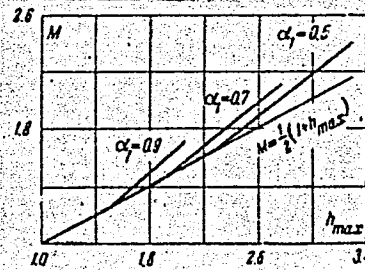


Fig. 2.

to the phase velocity of low oscillation at high frequencies. As the wave approaches the upper limit the light component drops out. Dispersion effects which compensate nonlinear spiraling appear at higher frequencies due to electron inertia. The critical velocity of the wave and the maximum magnetic field in the wave decrease with the reduction in concentration of the light component. The ion energy in the wave is estimated. It is shown that light ions are accelerated in a direction perpendicular to the wave motion when an isolated wave passes through a three-component plasma.

Card 2/3

L 26762-66

ACC NR: AP6013915

If friction between the plasma components is introduced into the original calculations, the result is a shock wave having an oscillator structure with a steep front. A profile is given for such a wave (see figure 3).

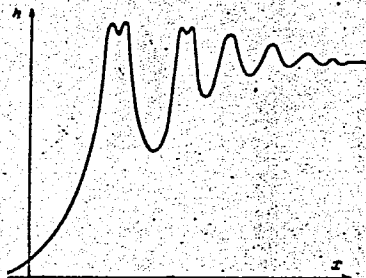


Fig. 3.

Orig. art. has: 4 figures, 4 formulas.

SUB CODE: 20/

SUBM DATE: 29Oct65/

ORIG REF: 003/

OTH REF: 001

Card 3/3 *h*

SAGDIYEV, T.G.

Two cases of practical application of the expanded similitude theorem to model studies of solid bodies. Izv. Otd. est. nauk AN Tadzh. SSR no.3:3-10 '59. (MIRA 15:5)

1. Institut seysmostoykogo stroitel'stva i seysmologii AN Tadzhikskoy SSR.

(Elasticity)
(Dimensional analysis)

S/169/62/000/002/024/072
D228/D304

AUTHOR: Sagdiyev, T. G.

TITLE: Experimentally establishing the distribution of seismic forces along the elevation of a chimney

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1962, 20, abstract 2A142 (Tr. In-ta seysmostoyk. str-va i seysmol. AN TadzhSSR, 8, 1960, 37-40)

TEXT: At four points along the elevation of a model chimney, 3 m in height, the accelerations during the action of a seismo-explosive wave were measured by means of accelerographs. The obtained curve of the distribution of seismic accelerations was compared with the results of a chimney calculation from the formula indicated in the standards CH-8 (SN-8) to CH-57 (SN-57). The curve derived from this formula differs considerably from the experimental one. /-Abstracter's note: Complete translation._/ ✓

Card 1/1

SAGDIYEV, T.G.; DILANYAN, A.A.

Results of model studies of factory smokestacks.
Trudy Inst. seism. stroi. i seism. 9:71-117 '61. (MIRA 15:11)
(Chimneys)

SAGDIYEV, T.G.

Results of an experimental study of models of beams made of
lightweight reinforced concrete. Trudy Inst. seism. stroi. i
seism. 11:159-177 '62. (MIRA 16:5)
(Beams and girders) (Lightweight concrete)

KUCHMI, M.I.; SAGDIYEVA, S.K.

Hygienic value of kurt and technic of its rational preparation.
Gig. sanit., Moskva no. 1: 52-53 Jan 1953. (CIWL 24:2)

1. Of Uzbek Scientific-Research Sanitary Institute. 2. Kurt is a local dairy cheese product containing 64% protein and 13% lactic acid.

SAGDULLAYEVA, M.

Distribution of soil fungi in relation to the depth of tillage
of a cotton field. Uzb. biol. zhur. 8 no.3:19-21 '64.
(MIRA 17:12)

1. Institut botaniki AN Uzbekskoy SSR.

SAGDULLAYEV, N.S., assistant

Case of the presence of a third fibular muscle. Med. zhur.
Uzb. no. 9:81 S '60. (MIRA 13:10)

1. Iz kafedry operativnoy khirurgii s topograficheskoy anatomiyei
(zav. - prof. M.S. Aronov) Andizhanskogo gosudarstvennogo
meditsinskogo instituta.
(MUSCLES—ABNORMITIES AND DEFORMITIES)

SAGDULLAYEV, N.S.

Prevention of postoperative neuromas. Med.zhur. Uzb. no.11:70 N '61.
(MIRA 15:2)

1. Iz kafedry operativnoy khirurgii s topograficheskoy anatomiyei
(zav. - prof. M.S.Aronov) Andizhanskogo gosudarstvennogo meditsinskogo
instituta.

(NERVES...TUMORS)

SAGDULLAYEVA, A.L.

Morphology of pollen in the poppy family(Papaveraceae). Probl.
bot. 4:11-50 '59. (MIRA 13:1)
(Poppy) (Pollen--Morphology)

SAGDULLAYEVA, M.

Specific composition of soil fungi of the typical Sierozems
of Tashkent Province. Uzb. biol. zhur. no.5:28-35 '61.
(MIRA 17:2)

1. Institut botaniki AN UzSSR.

SAGDULLAYEVA, M.

Effect of individual factors on the species and quantitative
correlation of soil fungi. Uzb. biol. zhur. 6 no.3:35-39
'62. (MIRA 15:6)

1. Institut botaniki AN UzSSR.
(ORDZHONIKIDZE DISTRICT--SOIL MICRO-ORGANISMS)
(FUNGI)

ABDUVALIYEV, A.A.; KHAYDAROV, Kh.F.; SAGDULLAYEVA, P.; OBNOSOVA, A.D.

Lacquers based on urea-formaldehyde resins modified with furfuryl alcohol. Lakokras.mat. i ikh prim. no.2:67-69 '64. (MIRA 17:4)

SAGDULLAYEVA-UMAROVA, A. I.

Key for identifying genera of the poppy family by pollen. Uzb. biol.
zhur. no.5:17-24 '60. (MIRA 13:11)

1. Tashkentskiy gosudarstvennyy pedinstitut.
(Poppy) (Pollen--Morphology)

L 08223-67 EWP(t)/ETI IJP(c) JD

ACC NR: AP6033317

SOURCE CODE: GE/0010/66/000/000/015/0469/0472

AUTHOR: Sager, D.

ORG: none

TITLE: Integrated circuit engineering

SOURCE: Radio und Fernsehen, no. 15, 1966, 469-472

TOPIC TAGS: integrated circuit, circuit microminiaturization, solid state circuit, thick film circuit, thin film circuit, hybrid circuit, semiconductor block engineering, transistorization, silicon transistor, germanium transistor, diffusion engineering, epitaxial layer growing, thin oxide layer, beam lead engineering

ABSTRACT: The author surveys circuit microminiaturization of electronic equipment. As the most recent method he sites the use of solid-state circuits i. e. thick film, thin film, "MOS", and hybrid circuitry and lists progressive miniaturization from electronic tube to biological system. Semiconductor block engineering and transistorization, especially in relation to silicon and germanium, are discussed and insulated solid state circuits are emphasized including diffusion methods, epitaxially grown layers and the use of elements consisting of very thin

Card 1/2

L 08223-67

ACC NR: AP6033317

oxide layers, or of wide intermediate air spaces (beam-lead engineering). The author concludes that solid state circuit technology is still in its infancy. It is possible to assemble many elements in the smallest spaces, to increase reliability substantially, and to combine solid state circuits with other circuits, but connections to outer terminals are still unsatisfactory, as are parasitic effects. The relatively large temperature coefficient of the passive elements is especially disturbing. Orig. art. has: 9 figures and 1 table.

SUB CODE: 09/ SUBM DATE: none/

cont 212 each

Sager, P.

✓ 2446. NEW YUGOSLAVIAN REFINERY USES COMBINATION APPROACH. Source: F.
 (Petrol. Refin., Sept. 1956, vol. 3, 330-332). The refinery at Bosanski
Brod, designed by H.W. Kellogg Co. processes 2600 bbl/day of Iranian
reduced crude to yield 30.5% gasoline, 2.5% liquefied petroleum gas
 (containing 65% of C₃ fraction), 5.2% gas and 62.0% heavy residue.
 Facilities include thermal reforming, recycle visbreaking of reduced crude,
 recycle cracking of gas oil, vacuum flashing of bottoms to fuel oil, vapour
 phase refining of gasoline by active clay, etc. (L).

Jack

*gm
mk*

SAGER, J.

"First Operational Experiences with the Hot Spraying of Paints." p. 158, Praha, Vol. 2, no. 4, 1954. "Discussion of Electric Spark Hardening of Machine-Tool Edges." p. 161, Praha, Vol. 2, no. 4, 1954.

SO: East European Accessions List, Vol. 3, No. 9, September 1954, Lib. of Congress

SAGER, J.

Mechanization of labor in a varnishing shop. p. 373.

STROJIRENSKA VYROBA Vol. 3, no. 9, Sept. 1955

Czechoslovakia

Source: EAST EUROPEAN LISTS Vol. 5, no. 7 July 1956

SAGER, Jaroslav, inz.

Antivibration coatings. Tech praca 16 no.11:Suppl. Naterove
hmoty a natery 16 no.11:insert '64.

SAGER, Jaroslav, inz.

New coating methods and coating materials. Tech praca 17
no.4:Suppl;Naterove hmoty a natery 17 no.4:insert '65.

1ST AND 2ND INDEX		PROCESSING AND PROPERTY INDEX		3RD AND 4TH INDEX	
Histological lesions of central nervous system produced by ischemia. M. JONESCO-SISESTI, O. NAGH, and H. ASKENASY (Bull. Acad. Sci. Roumaine, 1939-40, 22, 299-303).—Occlusion of the basilar and carotid arteries in the dog for 4-10 hr. produces widespread degenerative changes in the nerve cells in the brain. The changes are most frequent in the pyramidal cells of the anterior sigmoid gyrus, ventral thalamus, corpus striatum, red nucleus, Purkinje cells, and Dorsal nucleus. Other parts of the brain were generally normal. Autonomic nuclei were more resistant. Pathological changes in the mesencephalon produce decerebrate rigidity which is uninfluenced by changes in the olive. P. C. W.					
458-514 METALLURGICAL LITERATURE CLASSIFICATION					
LITERATURE		SERIALS		REFERENCES	

SAGER, O.

Research on the relationship between the substantia nigra and the cortex. p. 635.
(COMMUNICABLE. Rumania. Vol. 5, no. 3, Mar. 1955)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 7, July 1957. Uncl.

SAGER, O., And others.

Connections of the optic tract with the frontal lobe. p. 1199.
COMUNICARILE. Bucuresti. Vol. 5, no. 8, Aug. 1955.

SOURCE: East European Accessions List (EEAL) Library of Congress
Vol. 5, No. 7, July 1956.

SAGER, O., membru corespondent al Academiei R.P.R.; PETRESCU, M.;
VASILESCU, N.: BROSTEANU, E.R.: GOLDHAMMER, L.

Electroencephalographical study of hypertensive disease. Bul.
stiint., sect. med. 7 no.1:37-49 Jan-Mar '55.
(HYPERTENSION, manifestations

EEG)
(ELECTROENCEPHALOGRAPHY, in various diseases
hypertension)

SAGER, O.,; IAGNOV, Z.,; COTAESCU, I.,; COTAESCU, E.

Experimental data on shock in normal and hypophysectomized animals.
Bul. stiint., sect. med. 7 no.2:395-409 Apr-June 55.
1. Membru corespondent al Academiei RPR (for Sager).

(SHOCK, experimental
eff. on blood picture and adrenal hormones in normal &
hypophysectomized dogs)

(PITUITARY GLAND, eff. of excision
on blood picture and adrenal hormones in exper. shock)

(ADRENAL GLANDS, hormones
eff. of exper. shock, in normal & hypophysectomized
dogs)

(BLOOD
picture, in exper. shock in normal & hypophysectomized
dogs)

SAGER, O.,; POPESCU, M.,; MIRZA, A.,; ZISSU, M.

Study of unconditioned interoceptive reflexes. Bul. stiint., sect.
med. 7 no.3:789-804 July-Sept 55

1. Membru corespondent al academiei R.P.R. (for Sager)

(REFLEX)

interoceptive, splenic, unconditioned, in dogs)

SAGER, O., membru corespondent al academiei R.P.R.; GOLDHAMMER, L.;
FELIX, E.; POTOP, M.

Metabolism of glucides in animals after unilateral and bilateral
decortication. Bul. stiint., sect. med. 7 no.3:805-816 July-Sept 55.

(CARBOHYDRATES, metabolism

eff. of unilateral & bilateral decortication, in cats)

(GLUCOSE TOLERANCE TEST, same)

(BLOOD SUGAR

eff. of decortication, in cats)

(CEREBRAL CORTEX, physiology

eff. of unilateral & bilateral decortication on glucide
metab., in cats)

NICOLAU, Gh.St., academician,; BLUMENTHAL, M.,; FELLNER, M.,; SAGER, O.

Role of the central nervous system (cortex-sub-cortex complex) and of the connecting peripheral nerve pathways in trophicity of the skin. Bul stiint., sect. med. 7 no.4:1263-1280 Oct-Dec 55.

1. Institutul de terapeutica, Sectia de dermatologi si Colectivul de neurologie al Academiei R.P.R. de la Spitalul clinic de adulti Colentina. Membru Corespondent Al Academiei R.P.R. V. Cirnu, for Sager.

(SKIN, physiology

trophicity, role of CNS & connecting peripheral nerve pathways)

(CENTRAL NERVOUS SYSTEM, physiology

role in trophicity of skin)

(NERVES, PERIPHERAL, physiology

role in trophicity of skin)

GOLDHAMMER, L.,; MARES, A.,; Sager, O.

Studies on the problem of sleep and muscle tonus. Bul stiint.,
sect. med. 7 no.4:1281-1299 Oct-Dec 55.

1. Membru Corespondent al Academiei R.P.R. (for Sager)

(SLEEP DISORDERS

insomnia, induced in dogs by diencephalic &
mesencephalic lesions)

(MUSCLES, physiology

tonus, eff. of diencephalic & mesencephalic lesions,
in dogs.)

(DIENCEPHALON, physiology,

eff. of exper. lesions on sleep & musc. tonus)

(MESENCEPHALON, physiology

(SAME)

EXCERPTA MEDICA Sec 18 Vol. 1/11 Cardiovas. Dis. Nov 57

3105. SAGER O., BROSTEANO E., STANESCO V. and MOISANO M. Bucarest. Contribution à l'étude de l'hypertension artérielle *Arterial hypertension* Rev. neurol. (Paris) 1956, 94/6 (853—854)

EEG examination of 61 patients with essential arterial hypertension was carried out, and the results were compared with the clinical findings. The electroencephalographical anomalies observed were of the 'excitation' or of the 'inhibition' type; sometimes, paroxysmal bursts of epileptic activity were also present. Patients who had been hypertensive for over 4 yr. and particularly those with highly unstable forms, showed curves of the 'excitation' type. There was no correlation between the EEG and the aspects of the fundus of the eye.

Maurice — Geneva

SAGER, O.; BADEMSKI, Gh.; ROTH, R.R.; WEINBACH, R.; MIHALE, A.

The role of the central nervous system in pyretotherapy for syphilitic meningoencephalitis. The action of malaric fever & of fever produced by typho-paratyphic vaccine. Rumanian M. Rev. 1 no.2:47-49 Apr-June 57.

(SYPHILIS, compl.

meningo-encephalitis, ther., fever ther., CNS mechanisms)

(MENINGOENCEPHALITIS, etiol. & pathogen.

syphilis, ther., fever ther. CBS mechanisms)

(CENTRAL NERVOUS SYSTEM, in various dis.

syphilitic meningoencephalitis, eff. of fever ther.)

SAGER, Von O.

Physiological-morphological studies on the substantia reticularis.
Rev. sc. med., Bucur. no.2:79-92 1957.

1. Korrespondierendes Mitglied der akademie der rumainischen volks-
renublik.

(MENDULLIA OBLONGATA

substantia-reticularis, physiol. & morphol. studies (Ger))

RUMANIA / Human and Animal Physiology
Nervous System.

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 60777

Author : Sager, O.; Nostianu, V.; Chivu, V.; Floroa-Ciocoiu, V.
Inst : Rumanian Academy, Institute of Neurology
Titlo : Chlorpromazine (Largactil) Effect on the EEG of Animals
with Normal and Pathological Cerebral Circulation

Orig Pub : Studii si cartari neurol. Acad. RPR. Inst. neurol.,
1957, 2, No 1, 35-52

Abstract : Chlorpromazine (I) was injected into 18 dogs and the EEG
was recorded before and after the compression of both
carotid arteries. I was introduced also into the
perfusion fluid of the carotid sinus and into the III
ventricle of the brain. I produced slow waves in the
curarized animals, layered on the almost normal base
rhythm even when the blood pressure was not lowered. After

Card 1/2

144

SAGER, O.

Country : RUMANIA
 Category : Pharmacology and Toxicology. Tranquilizers
 Abs. Jour. : Ref Zhur-Biol, No 13, 1958, No 61370
 Author : Sager, O.; Chivu, V.; Florea-Giocoia, V.
 Institut. : Rumanian Academy, Institute of Neurology
 Title : Effect of Hexamethonium and Chlorpromazine
 (Largactil) upon Sinocarotid Reflexes
 Orig Pub. : Studii si cercetari neurol. Acad. RPR. Inst.
 neurol., 1957, 2, No 2, 171-184
 Abstract : The introduction of hexamethonium into the per-
 fusate of the carotid sinus of dogs, disconnec-
 ted from general circulation while preserving
 nervous connections, does not alter the excita-
 bility of mechanoreceptors of the carotid sinus.
 Chlorpromazine introduced in the same manner
 blocks the excitability of mechanoreceptors. The
 injection of chlorpromazine into the tuber cine-
 reum, into the third or fourth ventricles, and
 into the cisterna magna, inhibits the reactivity

Card: 1/2

EXCERPTA MEDICA SER 8 Vol 12/2 Neurology Feb

773. RESEARCH ON THE INTRANEURAXIAL ROUTES OF CONDUCTION OF
VISCERAL SENSITIVITY - Cercetări asupra căilor intraneuraxiale de con-
ducere a sensibilității viscerele - Sager O., Chivu V., Florea-
Ciociu V. and Bazilescu S. - STUD.CERC.NEUROL. 1957. 2/3
(295-311) Graphs 14 Tables 3

Stimulation of the gastric mechano-receptors by means of a balloon which distends
the stomach provokes the appearance of ample and regular electric waves (11 c.p.s.)
in the brain stem and in the reticular substance of the diencephalon, notably in the
following formations: ventral nucleus of the raphe of the peduncular tegmentum,
medial and lateroventral reticular substance of the mesencephalon, central nucleus
A, medial nucleus of the thalamus, medial subthalamic nucleus and median and
posterior infundibular nuclei. On the cortical leads, stimulation of the mechano-

SAGER, O.

Anatomico-physiological studies of reticular substance. Bul. stint.,
sect. med. 9 no.1:113-133 1957

(BRAIN, physiol.

reticular substance, eff. of visual, auditory & drug
stimulation of various portions of brain & lesions of
diencephalon & mesencephalon, in cats)

EXCERPTA MEDICA Sec 8 Vol 12/12 Neurology Dec 59

5944. STUDIES OF THE PRESSOR EFFECTS OF THE CORTICOVISCERAL TRACTS. ACTION OF CHLORPROMAZINE - Cercetări asupra căilor presoare cortico-viscerale. Acțiunea clorpromazinei - Sager O., Chivu V. and Florea-Ciocolu V. - STUD. CERCET. NEUROL. 1958, 2/1 (85-95) Graphs 4 Illus. 3

In dogs, a study was made of the hypertensive effect from stimulation of the cortex in the pericrucial region, and an attempt is made at precisely defining the tract of the fibres leading to these cortical stimulations of a pressor nature. The conclusion is reached that these stimuli neither pass through the bulbar pyramids nor the median portion of the mesencephalopontine formation reticularis. The blocking of the pressor influx by chlorpromazine is more marked when this substance is administered by the i.v. route than when it is introduced into the cisterna cerebellomedullaris. The fibres which transmit the cortical stimuli of a pressor nature make numerous synapses in the lateral portion of the bulbopontine substantia reticularis.

Voiculescu - Bucharest

EXCERPTA MEDICA Sec 2 Vol 13/5 Physiology May 60

2460. CONDITIONED SALIVARY REACTIONS OF THE BILATERALLY DE-
CORTICATED ANIMAL - Reactii conditionate salivare la animale decorti-
cate bilateral - Sager O., Cinca I., Dimitriu R. and Colea A1.
- STUD. CERCET. NEUROL. 1959, 4/1 (119-123) illus. 1

It has been found possible to obtain conditioned salivary reflexes (to sound) in
dogs after bilateral ablation of the neopallium. Extinction of the reflex ensues
if the acoustic stimulus is repeated about 10 times without reinforcement by the
giving of food. No differentiation between different intensities of the sound could
be established. It is concluded that the temporary connection between the condition-
ed and the unconditioned stimulus occurs in the rhinencephalon.

Voiculescu - Bucharest

ZAGER, O. [Sager, O.]; MARESH, A. [Mares, A.] .

Optic thalamus syndrome of vascular origin. Nauch. trudy Inst.
nevr. AMN SSSR no.1:75-81 '60. (MIRA 15:7)

1. Institut nevrologii imeni I. P. Pavlova Akademii Rumynskoy
Narodnoy Respubliki, Bukharest.

(OPTIC THALAMUS—DISEASES)

SAGER, O.; MARES, A.

Studies on the diencephalon. The connections of the dorsomedian nucleus. Rev. sci. med. 5 no.1/2:89-93 '60.

1. Corresponding member of the Academy of the R.P.R. (for Sager)

(DIENCEPHALON anat & histol)

SAGER, O.; CINKA, I.; DIMITRIU, R.; KOLIA, A.

Conditioned salivary reactions in bilaterally decorticated animals.
Rev. sci. med. 5 no.1/2:95-98 '60.

1. Corresponding member of the R.P.R. (for Sager)

(REFLEX, CONDITIONED exper)
(CEREBRAL CORTEX physiol)

ZAGER, O. [Sager, O.]; DROKAN, Zh. [Drocan, J.]; CHINKA, I. [Cinca, I.]

Electroencephalographic studies of acute disorders of cerebral
blood circulation. Nauch. trudy Inst. nevr. AMN SSSR no.1:
233-240 '60. (MIRA 15:7)

1. Institut nevrologii imeni Pavlova Akademii Rumynskoy Narodnoy
Respubliki, Bukharest.

(ELECTROENCEPHALOGRAPHY)
(CEREBROVASCULAR DISEASE)

SAGER, O., prof.; CINCA, I.; COLEA, Al.; POPESCU, Stefania

The role of the rhinencephalon in the formation of conditioned reflexes.

Rumanian M Rev. no.1:241-243 Ja-Mr '61.

(REFLEX, CONDITIONED) (BRAIN physiology)

SAGER, O.; MARES, A.

Anatomical, clinical and electroencephalographic peculiarities in
circulatory disturbances of the reticular formation. Rumanian med.
rev. no.2:49-56 '62.

(RETICULAR FORMATION)

SAGER, O., academician; MARES, A.

Control by the rhinencephalon of the vascularization of the digestive tract. Stud. cercet. endocr. 14 no.4/5/6:495-603 '63.

ACCESSION NR: AT4043090

S/0000/64/000/000/0485/0489

AUTHOR: Dezider'yeva, I. P., Sageyeva, R. M.

TITLE: Anodic oxidation of Fe-Mi alloys in caustic soda solutions

SOURCE: Mezhevuzovskaya konferentsiya po anodnoy zashchite metallov ot korrozii. 1st, Kazan, 1961. Anodnaya zashchita metallov (Anodic protection of metals); doklady* konferentsii. Moscow, Izd-vo Mashinostroyeniye, 483-489

TOPIC TAGS: iron nickel alloy, alloy anodic oxidation, electrodeposited iron nickel alloy, alloy structure, passive film structure, electron diffraction analysis, galvanometric oxidation analysis, alloy phase composition effect, anodic oxidation, corrosion, nickel containing alloy, caustic soda, alkaline corrosion

ABSTRACT: The structures of Fe-Ni alloys (32-75% Ni, electrodeposited) and the passive films developing on them were studied by electron diffraction, while galvanometric methods with automatic registration of potential-time curves were used to analyze the anodic oxidation of Fe, Ni and their alloys (25C, 1N NaOH solution, $i=1 \text{ ma/cm}^2$). It was established that oxidation occurs in several stages; the $\alpha - \tau$ curves of the alloys are analogous to those for Fe, hence anodic oxidation of the more electrical negative alloy component governs the potential. Phase composition also affects
Card 1/2

ACCESSION NR: AT4043090

anodic oxidation. Some displacement of potentials at various stages of the process and a noticeable retardation of alloy passivation were found in solid solutions with 32-50% Ni as compared to homogeneous systems. The crystalline structure of passive films depends on the sample structure. Since the crystal lattice of Fe-Ni (25-75%) was analogous to that of Ni, the alloy represents a solid solution of Fe in Ni. Orig. art. has: 3 tables and 5 graphs.

ASSOCIATION: none

SUBMITTED: 13Mar64

SUB CODE: MM

ENCL: 00

OTHER: 001

NO REF SOV: 007

Card 2/2

SAGHAFI, M., ing.

Contribution to the study of the flow of viscous fluids in circular tubes under various temperatures. Vodoprivreda Jug 2 no.7/8:41-42 (EEAI 10:1)
'59.

1. H.S.A.
(Fluids) (Viscosity) (Tubes)
(Irrigation) (Hydraulics)

SAGHELYI, L.

Hungarian glass manufacturing in the past. p.350. Vol. 7, no.9,
Sept. 1955. Epitoanyag.

SOURCE: East European Accessions List (EEAL), LC, Vol. 5, No. 2, Feb. 1956

Q-3

ROMANIA / Farm Animals. Sheep and Goats.

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 64455

Author : Saghin, I.; Hustiu, C.; Dobrovici, M.

Inst : Not given

Title : On the Problem of Milk Production in the Individual Sector

Orig Pub : Probl. zootehn., 1957, No. 1, 56-58

Abstract : No abstract given

Card 1/1

SAGHIN, I.

"Raising of animals; achievements and possibilities."

p. 20 (Drumul Belsugului) No. 8, Aug. 1957
Bucharest, Rumania

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,
April 1958

RUMANIA

SAGHIN, I. Dr. of the Zootechnical Research Institute (Institutul de Cercetari Zootehnice).

"Contributions to a More Rational Organization of Livestock Breeding in the Agricultural Cooperatives."

Bucharest, Revista de Zootehnie si Medicina Veterinara, Vol 16, No 4, Apr 66, pp 9-18.

Abstract: The author analyzed the various processes involved in the animal-raising activities of agricultural cooperatives to determine their dynamics in the course of the year. He concluded that: animal production in general is a seasonal activity; milk production is highest in summer, lowest in winter; delivery of cattle for meat is irregular, that of pork more regular; egg production is much higher in spring than at other times. Some suggestions based on these conclusions are offered.

Includes 4 tables and 5 figures.

SAGHIN, VICTOR
SURNAME, Given Names

Country: Rumania

Academic Degrees:

Affiliation: -not given-

Source: Bucharest, Farmacia, Vol IX, No 9, Sep 1961, pp 553-561.

Data: "A Study of the Injectable Drugs Included in the 7th Edition
of the Rumanian Pharmacopoeia."

Authors:

TORJESCU, V., -Farm. Dr.-

MOISIN, Eliza, -Pharmacist.-

CAMENITA, Maria, -Pharmacist.-

SAGHIN, Maria, -Pharmacist.-

NAUM, V., -Pharmacist.-

GPO 981643

JAKAB, Andras; SCHAFER, Lajos; TAPPER, Dezso, dr.; RADETZKY, Jenő;
PATKAI, Imre, dr.; BABAY, Karoly; SOLYMOSSY, Laszlo, dr.;
GYORY, Jenő; FEKETE, Karoly; FERENCZ, Miklos; GEREBY, György;
SZEMERE, Laszlo; SAGHY, Antal, dr.; CSABA, Jozsef; KEVE, Andras,
dr.; AGARDI, Ede; KOFFAN, Karoly; SCHMIDT, Egon

Data on the avifauna of Dunantul. Aquila 69/70:260-266 '62-'63
[publ. '64].

POGATSA, Gabor, dr. Technikai munkatársak: NEMETH, Lajosné; SAGHY,
Jozsefne.

Effect of chlorpropamide on urea synthesis by the liver and
gluconeogenesis. Orv. hetil. 105 no. 26:1217-1218 28 Je'64

1. Budapesti Orvostudományi Egyetem, II. Belklinika.

SAGHY, M.

SAGHY, M. Comparing the washing effects of various washing agents
used in the finishing department for wool cloth. p. 291,
No. 8; Aug. 1956
MAGYAR TEXTILTECHNIKA
Budapest

SOURCE: EAST EUROPEAN ACCESSIONS LIST (EEAL) VOL 6 NO 4 April 1957

SAGHY, MAGDA

HUNGARY/Dyes and Chemical Processing of Textile Materials.

H.

Abs Jour : Ref Zhur - Khimiya, No 19, 1958, 66309

Author : Jantai Arpad, Saghy Magda, Tobisch Ferenc

Inat : -

Title : Change of Color of Hybrid Wool Fabrics Containing Polyester Fibers Under the Influence of a High Temperature.

Orig Pub : Magyar textiltechn., 1957, No 3, 146-148.

Abstract : Laboratory experiments conducted in connection with the receipt of complaints from users of a suit fabric containing 33% wool thread (dyed a black color), 34% thread from a viscose fiber (dyed in the spinning process), as well as 23% of nondyed and 10% dyed (by dispersion dyes) of polyester fibers, showed that the reason for the change of color and coarsening of the fabric is connected with the presence in it of a polyester component. In spite of the fact that the normal softening temperature of the dry polyester fabrics is 235-240°,

Card 1/2

51

Abs Jour : Ref Zhur - Khimiya, No 19, 1958, 66309

these fibers in conditions of ironing through a moist rag begin to soften at a 200° temperature of the iron. For the elimination of similar defects it is necessary either to regulate the conditions of ironing or to secure and increase the softening temperature of the polyester fibers to 300°.

Card 2/2